

# Fuel management for transport operators

Thorntons plc



- Lower fuel costs
- Lower maintenance costs
- Lower pollution
- Lower accident rate
- Payback one year



ENERGY EFFICIENCY

BEST PRACTICE  
PROGRAMME

## HOST ORGANISATION

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*Thorntons participation in the fuel saving programme has generated significant cost savings, while enhancing our image as an environmentally conscious company.*

*The simplified, but rigorous, fuel monitoring system that is now in place has almost eliminated the need for off-site refuelling, with all its potential pitfalls.*

*This, allied to the use of data-logging equipment, has provided the tools to help manage the drivers and address the root cause of high fuel consumption, namely the driver's right foot!*

*Jon Pollard, Distribution Executive, Thorntons plc*

### THORNTONS PLC

Originated in Sheffield in 1911, Thorntons plc is an established manufacturer and retailer of high quality confectionery with over 580 outlets in the UK and France.

The company employs over 2,000 people in its shops and three manufacturing sites at Somercotes, Belper and Flixborough.

## PHASE I - MANUAL FUEL MONITORING

### BACKGROUND

Thorntons plc manufactures high quality chocolates, toffee and ice cream. These are delivered to 520 retail outlets throughout the UK using a fleet of articulated and box van refrigerated vehicles. The fleet, based at Belper in Derbyshire, uses 26 vehicles from different manufacturers, ranging in size from 7.5 to 38 tonnes.

Prior to this project, Thorntons had a policy of monitoring fuel consumption. However, as the data were inaccurate due to the omission of many off-site re-fuellings little use was made of the information relating to individual vehicles. As a result, the data could not be published and drivers were unaware of their fuel performance.

As a first step towards improving fuel efficiency, Thorntons installed speed limiters set at 56 mph on its vehicle fleet. This has since become a legal requirement for all goods vehicles.

Keen to improve the environmental image of the company, and to reduce fuel consumption costs further, senior management embarked on a two-phase fuel management programme.

### PHASE I - FUEL MONITORING USING MANUALLY RECORDED DATA

In 1994, Thorntons was invited to take part in a project funded by the European Commission's SAVE Programme. The aim was to devise a simple method of fuel management for goods vehicle fleets, which could be replicated widely.

The methodology of the project was to:

- accurately monitor the fuel performance of a group of similar vehicles selected from the fleet;
- inform the drivers how their vehicles were performing;
- train and encourage the drivers to improve the fuel performance of their vehicles;
- measure and report the improvements.

The first step was to introduce a manual method for collecting fuel consumption data. 'Weekly Sheets' were introduced on which each driver had to enter the amount of fuel put into the vehicle's tank and the odometer reading at the time.

In addition, an 'In-Cab Computer' (ICC) was fitted to one vehicle. This instrument, as well as providing very accurate fuel performance data, gave information on the driving style being adopted by the driver.

The fuel consumption data highlighted clearly the sources of inaccuracy in the manual data. In response to this, the off-site fuel receipts, which were originally sent directly to the Accounts Department, are now firstly verified by the Transport Department.

The fuel monitoring system was improved further by drivers completing a daily route log and work summary sheet.

This project was monitored independently by: March Consulting Group. Tel: 0161 872 3676

The equipment was supplied by: Leaffield AVM Ltd. Tel: 01827 311912

and

Lucas Kienzle Instruments Ltd. Tel: 0121 328 5533

There may be other suppliers of similar energy efficiency equipment in the market. Please consult your supply directories or contact ETSU who may be able to provide you with more details.

## COSTS AND SAVINGS FOR PHASE I

ROUTE IDENTIFICATION		FUEL/OIL USAGE RECORD	
DRIVER		VEHICLE	REFRIGERATION UNIT
MATE		LITRES	COST
DATE		LITRES	COST
VEHICLE		SITE FUEL	
TRAILER		OFF-SITE FUEL	
*START SPEEDO		SITE OIL	
*FINISH SPEEDO		OFF-SITE OIL	
*SPEEDO READINGS APPLY FROM START TO FINISH OF ROUTE		OTHER	

DEPART	TIME	ARRIVE	TIME	DELIVER	OTHER	BASE	B/DOWN	ADMIN	REST	COMMENTS
Start time										
Delivery 1										
Delivery 2										
Delivery 20										
Delivery 21										
Finish time		Totals in minutes only								

Fig 1: Examples of driver log sheets

The sheets are checked every day for accuracy and any discrepancies are discussed with the driver immediately. This makes it far easier to rectify inconsistencies and is a very important way of keeping the drivers aware of their effect on fuel performance.

As fuel consumption varies throughout the year due to seasonal weather conditions and different load factors, data were collected for a complete year. Targets were then set for each driver and vehicle, based on the previous year's performance.

Thorntons is convinced that the manual recording system is an essential part of its fuel management programme.

#### Costs and Savings for Phase I

Phase I of the fuel management programme achieved a 3% improvement in the fuel efficiency of the whole fleet during one year, corresponding to a cost saving of £7,300/year.

Allowing for staff running costs of £4,200/year, the net annual savings were therefore £3,100, resulting in a

payback period of one year for Phase I of the programme. The set-up costs are shown in Table 1.

Table 1: Phase I set-up costs

Item	Cost (£)
ICC with fuel meter	1,200
Software*	550
Management time	1,300
Total	£3,050

\* The software need only be purchased once, regardless of the number of vehicles using it.

#### PHASE II - FUEL MANAGEMENT USING DATA-LOGGERS

While manual fuel monitoring allows poor performance to be identified, it gives little help in indicating the source of the problem.

Data-loggers assist by:

- providing accurate and indisputable data;
- offering instantaneous in-cab advice to the driver;
- providing easily understood reports for drivers and management;
- identifying fuel performance improvement opportunities.



## PHASE II - FUEL MANAGEMENT USING DATA-LOGGERS



*Downloading information for analysis*

Thorntons therefore decided to fit eight vehicles with new data-loggers in August 1995.

The new data-loggers measure the following parameters:

- date and time;
- road speed;
- engine speed;
- idling time;
- distance;
- number of brake applications;
- harsh braking;
- rapid acceleration.

Although the fleet is not fully equipped with data-loggers, most drivers regularly use a vehicle with a logger fitted. Each driver has a personal identification card which is inserted into the logger before each journey. The card is then used to download the information to a computer for analysis.

A warning is given to the driver each time the vehicle parameters move outside pre-set limits. These limits can be set individually according to each vehicle's operating characteristics. When the driver exceeds a parameter, the unit beeps, flashes at him and the violation is recorded. Regular reports are produced for Thorntons by the data-logger

supplier. Most users, however, produce their own reports using software provided by the supplier.

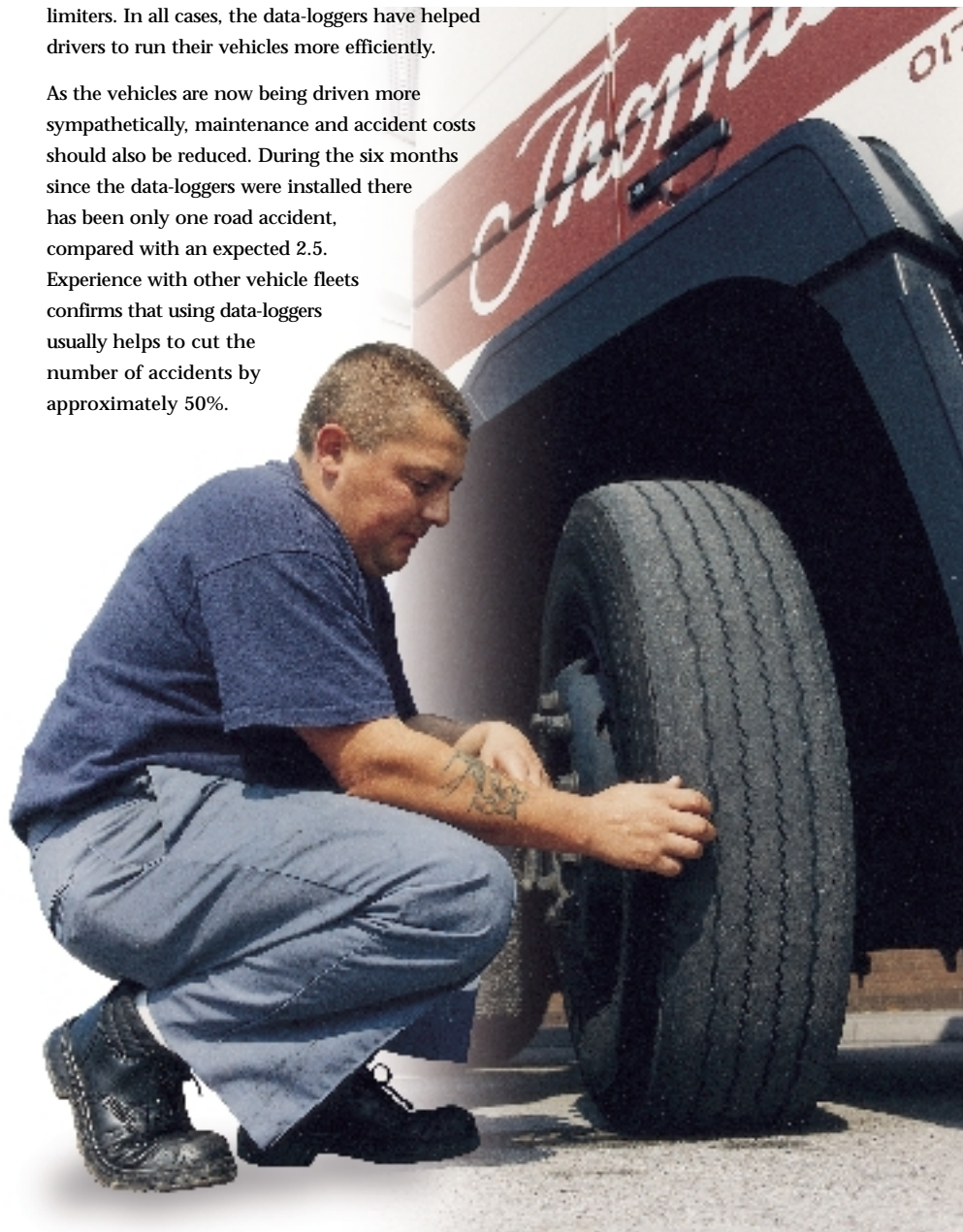
### Logger Performance

The data-loggers have been very successful in identifying the reasons for poor fuel performance.

For example, on one vehicle, a brake which was continuously dragging was quickly discovered and other vehicles were found to have faulty speed limiters. In all cases, the data-loggers have helped drivers to run their vehicles more efficiently.

As the vehicles are now being driven more sympathetically, maintenance and accident costs should also be reduced. During the six months since the data-loggers were installed there has been only one road accident, compared with an expected 2.5. Experience with other vehicle fleets confirms that using data-loggers usually helps to cut the number of accidents by approximately 50%.

*Data-loggers allow problems, such as dragging brakes, to be identified quickly*



## COSTS AND SAVINGS FOR PHASE II

Table 2: Improvement in fleet fuel consumption

	7.5 tonne	17 tonne	Articulated vehicles	Fleet
Number of vehicles	2	5	19	26
Vehicles with data-logger	0	5	3	8
mpg Aug 94 - Jan 95	14.17	11.69	7.83	8.66
mpg Aug 95 - Jan 96	14.79	12.67	8.24	9.16
% Improvement in mpg	4.4	8.4	5.2	5.8

The information available also makes it easier for management to assess the most economical routes and the most suitable types of vehicle. Thorntons has already adjusted its vehicle purchasing policy to suit its operations more closely.

*Data enables drivers to compare their performance with that of others*



### Costs and Savings for Phase II

Since fitting the data-loggers in August 1995, fuel efficiency has improved for all classes of vehicle (Table 2).

Savings have continued to be achieved on vehicles which were not fitted with data-loggers. This is due in part to the manual fuel monitoring system and the speed limiters, but also to the culture change since the introduction of the data-loggers.

The set-up costs for Phase II of the project were £9,000 for eight data-loggers and £700 for management time. Annual running costs include:

- £1,040 for the production of the weekly reports;
- £3,080 in staff time for running the manual fuel monitoring system and, to a lesser extent, the data-loggers.

Experience has resulted in less time being spent on operating the manual fuel management system, hence the lower staff running costs during Phase II of the project.

The 5.8% improvement in fuel efficiency is worth £14,500/year. The net annual cost savings are therefore £10,380 giving a payback period of 11 months for Phase II of the programme. Lower maintenance and accident costs, which are not included here, should reduce this further.

### FEEDBACK TO DRIVERS

Most drivers have reacted favourably to the fuel management programme and are keen to play their part. Every month a graph showing each driver's



## THE FUTURE



*The company plans to equip the remainder of the fleet with data-loggers*

performance is displayed on a noticeboard. This shows the current fuel performance, last year's fuel performance and the driver's individual target. In addition, a league table is displayed showing each driver's variance from his target. The drivers can thus compare performance, a feature which introduces some friendly competition and motivation. A further incentive is a prize, which is given to the driver who has improved his performance most, compared with the same period in the previous year.

#### THE FUTURE

Thorntons' target for improving average fuel efficiency across the fleet was 4% for the year up to July 1996. The results achieved thus far suggest that this target will be exceeded. The company plans to invest a further £20,000 to equip the remainder of the fleet with data-loggers.



*Each driver's performance is displayed on a notice board*

## CONCLUSIONS

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Fuel performance can be improved by adopting simple measures involving the monitoring and publishing of fuel performance results. However, eliminating errors from manually collected data is essential if good results are to be obtained. This can be achieved by:

- drivers and management adopting a disciplined approach to fuel management;
- regularly calibrating the on-site pump;
- correctly recording the fuel obtained in transit;
- ensuring that vehicle tanks are completely full each time odometer readings are taken;
- checking the record sheets for mistakes.

Additional savings can be achieved by the use of suitable on-board data-loggers. For most operators,

the payback period on such equipment is likely to be in the range 6 to 18 months, which would be acceptable to most financial directors.

Senior management at Thorntons have been involved with the project right from the start. The importance of this cannot be overstated; the success of the fuel management programme is directly related to the commitment and support given to it.

The management of Thorntons' Transport Department has made special efforts to involve the drivers during the development and implementation of the fuel management programme. The feedback of improvements in performance and the provision of incentives continue to maintain driver interest.

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### Further information

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